

Facility Configuration Management

Los Alamos National Laboratory

Laboratory Implementation Requirements LIR240-01-01.2

Issue Date: 03/12/97 (Revised 9/22/99)

Mandatory Document

1.0 Introduction

1.01 Lessons Learned

Note: [Click here](#) for Lessons Learned that may apply to the requirements contained in this LIR.

1.1

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1.2 Overview

This Laboratory Implementation Requirements (LIR) provides implementation requirements for Configuration Management (CM) at Laboratory facilities, programmatic operations within facilities, and Laboratory Support Groups (LSGs) whose operations may impact mission, hazards, and safety envelopes defined in the Facility Safety Plans. CM implementation shall be consistent with the following goals:

- a) Ensure the facility is operated within the hazards and safety envelope defined in its approved Facility Safety Plan per UC/DOE Contract No. WO7405-ENG-36.
- b) Support the safe and reliable operation, maintenance and modification of SSCs important to the Laboratory's Integrated Safety Management program and mission.

This LIR requires the planning and implementation of CM through the use of the following program elements: 1) establish and document the facility and programmatic⁽¹⁾ *Baseline*; 2) capture and maintain baseline documentation and data via *Information Management Systems*; 3) apply *Change Control* to maintain the baseline and information management systems, and; 4) routinely *Assess* the process.

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See Appendix B (Guidance) for Recommended Major Implementation Criteria for Self-Assessment

Note 1): Within the scope of this LIR, the programmatic baseline includes only the operational controls for those programmatic activities that have the potential to impact the hazards and safety envelope as defined in the Facility Safety Plan.

2.0 Purpose

The purpose of this LIR is be to define the Laboratory requirements for the development of new, or the enhancement of existing, policies, plans and procedures implementing CM at operational Laboratory facilities. The goal of this LIR is be to provide a standard, graded approach for CM with a minimal set of requirements that are applied to both nuclear and non-nuclear facilities.

Guidance Note: Please refer to http://arania.lanl.gov/fwo_pub/fwo_decs/html/cm-pwi-index.html for guidance information on “Project Work instructions”, a suggested method for fulfilling the requirements set forth in this LIR.

3.0 Scope

These requirements shall apply to all operational Laboratory facilities, including nuclear and non-nuclear facilities that are classified as Hazard Category 2 or 3 (for nuclear) or Moderate, Low, or No Hazard (for non-nuclear). Using a graded approach, the CM requirements defined herein shall be applicable to *facility* and *programmatic* hardware, software, design documents, and procedures that affect the hazards and safety envelope defined in the Facility Safety Plan.

Laboratory Support Groups that provide services to Laboratory facilities shall also meet the requirements of this LIR. Specifically, Laboratory Support Group CM shall be developed and implemented using a graded approach that is consistent with the requirements defined herein for each type of facility (by hazard category, see Tables 1 and 2) for which they provide services.

4.0 Acronyms and Definitions

Acronyms and definitions are provided in Appendix A.

5.0 Responsibilities

5.1 Owning Division Director shall

Provide leadership and management support for the application of CM at the facilities owned.

Support the Facility and Program Managers in the development, implementation, and maintenance of facility CM policies, plans and procedures.

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5.2 FWO Facility Engineering shall

Develop and maintain the CM-related LPR and LIRs for the Laboratory.

Serve as the Office of Institutional Coordination (OIC) to assist in the planning, implementation, and maintenance of facility CM plans.

Provide Subject Matter Experts to perform assessments of facility CM policies, plans, procedures, and their implementation. Provide observations (with recommendations) to Facility Managers and assistance for issue resolution.

Provide CM training to facilities and institutional groups.

Provide subject matter expertise on CM plan development, application of the graded approach to CM, and implementation of facility baselining techniques.

Review all CM program and implementation plans.

5.3 Facility Manager shall

Ensure the development, implementation, and long term maintenance of facility operational CM policies, plans and procedures are in accordance with the applicable Laboratory standards (e.g., LPR, LIRs, etc.).

Ensure facility operations comply with facility CM requirements.

Approve commitments associated with facility CM implementation plans (including scope, budget, and schedule).

Ensure that facility-tenant agreements include any necessary CM interface requirements for programmatic activities that can impact the hazards and safety envelope as defined in the Facility Safety Plan.

5.4 Group Leaders (Tenant and LSGs) shall

Ensure that group activities and facility CM interfaces are conducted in accordance with applicable facility CM requirements.

6.0 Precautions and Limitations

None.

7.0 Requirements

7.1 Facility Baseline

Baselines shall be established at a level commensurate with the hazard category and management level(s) of facility structures, systems or components (SSC). Baselines shall be defined by the minimum set of documentation required to enable facility, LSG, and programmatic activities to be conducted within the hazards and safety envelope defined in the Facility Safety Plan. The types of documentation that constitute a facility baseline include, but are not limited to, analysis and calculations, equipment data, drawings, software

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documentation, specifications, vendor manuals, facility or system design descriptions and procedures (e.g., administrative, operating, surveillance). The minimum baseline requirements for nuclear and non-nuclear facilities that shall apply are identified in Tables 1 and 2.

Guidance Note: The Facility Manager may incorporate additional SSCs into the Configuration Management Program as deemed appropriate for the facility.

7.2 Change Control

A formal, graded process for controlling change to the baseline shall be established. Applicable changes to the baseline include hardware, design documentation, and procedures. Also, a control process shall be established to control changes to facility software programs that generate facility baseline data.

7.3 Information Management Systems

Information within the facility baseline shall be controlled to enable retrieval of information that defines the hazards and safety envelope for the facility.

Information management systems used to control required information shall include the following:

Document Control and Records Management: A document control and records management system, including a Master Document List, shall be established to identify, track and control facility baseline documents. CM related document types are listed in Appendix A.3.

Equipment Data: An equipment data management system (i.e., Master Equipment List) shall be maintained to identify and control equipment information (building, system, identification number, name, function, and management level as a minimum) as required by LIR230-04-01, Laboratory Maintenance Management System.

7.4 CM Assessments

Periodic CM self-assessments shall be performed to ensure conformance to the requirements delineated in this LIR. Facility Managers shall define the assessment period applicable to their facilities.

8.0 CM Documentation

Each Facility Manager shall control and maintain all planning and implementing documentation associated with facility configuration management.

9.0 References

9.1 Document Ownership

The Office of Institutional Coordination for this document is FWO Facility Engineering.

9.2 Documents

LIR230-01-02, Graded Approach for Facility Work

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LIR230-04-01, Maintenance Management Program

LPR240-01-00, Facility and Operating Limits and Configuration

LIG240-01-10, Facility Safety Plan.

LPR240-02-00, Managing Facility and Tenant Operations Limits and Configuration

29CFR Part 1910, Process Safety Management of Highly Hazardous Chemicals, Explosives and Blasting Agents

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Table 1
Nuclear Facility Baseline Requirements

Facility and Programmatic Baseline Information	Facility Hazard Category (1) (by SSC category) (2)						
	Hazard Category 2				Hazard Category 3		
	ML-1	ML-2	ML-3	ML-4	ML-2	ML-3	ML-4
Facility Safety Plan							
Facility Safety Plan and Supporting Documentation (e.g., SARs, TSRs, Safety Assessments, etc.)	√				√		
Design and Configuration							
Priority Drawings	√	√	(3)		√	(3)	
System Design Descriptions	√	√	(3)				
Facility Design Descriptions					√		
Master Equipment List	√	√	(3)		√	(3)	
Software Documentation	√	√			√		
Procedures							
Facility/Group Procedures	√	√	(3)		√	(3)	
Facility Operating Procedures	√	√	(3)		√	(3)	
Facility Surveillance	√	√	(3)		√	(3)	
Notes: 1) Facility Hazard Category referenced in the Facility Safety Plan. 2) Management Levels applied in this table are defined in LIR 230-01-02, Graded Approach for Facility Work and LIR 230-04-01, Maintenance Management Program with additional guidance found in LIG 230-09-01, Developing Graded Master Equipment Lists. 3) Required for ML-3 SSCs that provide a mission critical, defense in depth, or worker safety function or whose failure may impact operation of ML-1, or -2 SSCs. Legend: √ Required							

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Table 2
Non-Nuclear Facility Baseline Requirements

Facility and Programmatic Baseline Information	Facility Hazard Category (1) (by SSC Category) (2)							
	Moderate			Low			No Hazard	
	ML-2	ML-3	ML-4	ML-2	ML-3	ML-4	ML-3	ML-4
Facility Safety Plan								
Facility Safety Plan and Supporting Documentation		√			√		√	
Design and Configuration								
Priority Drawings	√	(3)		√	(3)			
System Design Descriptions								
Facility Design Descriptions		√			√			
Master Equipment List	√	(3)		√	(3)		(3)	
Software Documentation	√	(3)		√				
Procedures								
Facility/Group Operating Procedures	√	(3)		√	(3)		(3)	
Facility Surveillance Procedures	√	(3)		√	(3)		(3)	
Notes: 1) Facility Hazard Category referenced in the Facility Safety Plan 2) Management Levels applied in this table are defined in LIR 230-01-02, Graded Approach for Facility Work and LIR 230-04-01, Maintenance Management Program with additional guidance found in LIG 230-09-01, Developing Graded Master Equipment Lists. 3) Required for ML-3 SSCs whose failure may impact operations of ML-2 SSCs.								
Legend: √ Required								

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Appendix A

Acronyms, Definitions and Document Types

A.1 The following acronyms shall be consistently employed throughout the Laboratory
Acronyms for the development and implementation of facility CM and related implementing programs and documentation.

CM	Configuration Management
DOE	Department of Energy
FDD	Facility Design Description
FWO	Facilities & Waste Operations Division
LANL	Los Alamos National Laboratory
LIR	Laboratory Implementation Requirements
MEL	Master Equipment List
OIC	Office of Institutional Coordination
SAR	Safety Analysis Report
SDD	System Design Description
SSC	Structure, System, or Component
UC	University of California

A.2 **Configuration Management.** An integrated management program that establishes
Definitions consistency among design requirements, physical configuration, and facility documentation, and maintains this consistency throughout the life of the facility as changes occur. The CM program consists of CM functions associated with the following program elements: program management, design requirements, document control, change control, and assessments.
[Source: DOE-STD-1073-93-Pt.1]

Document Control. A process that identifies, stores and controls, distributes, tracks status (especially during revisions), and retrieves documents. [Source: DOE-STD-1073-93-Pt.1]

Graded Approach. A process by which the level of analysis, documentation, and actions necessary to comply with a requirement are made commensurate with a number of considerations, including the relative importance to safety, safeguards, and security; the magnitude of any hazard involved; the life cycle stage of a facility; the programmatic mission of a facility; the particular characteristics of a facility; and any other relevant factor.
[Source: DOE-STD-1073-93-Pt.1]

Hazard. Hazards are defined as a source of danger (i.e., material, energy source, or operation) with the potential to cause illness, injury, or death to personnel or damage to an operation or the environment (without regard for the likelihood or credibility of accident scenarios or consequence mitigation). [Source: DOE-STD-3009-94]

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Laboratory Support Groups (LSGs). Those support organizations that support the Facility Manager in the safe operation of the facility. Functions performed by these LSGs include fire protection, stack monitoring, hood certification and release for use, radiation monitoring, project management, records management, and facility engineering.

Management Levels (MLs). A classification system for determining that the degree of management control applied to each project element or deliverable is consistent with its intended performance; complexity; governing codes, standards or regulatory requirements; mission; importance; environmental consequence; and safety and health risk. [Source: LIR230-03-01 Facility Management Work Control]

Programmatic. Those issues that pertain to the scientific mission, research and development, and associated SSCs within a facility.

Records Management. Activities that deal with historical records that are not subject to revision (e.g., correspondence, test results, reports, etc.) that must be retained to support efficient business practices, maintenance of facility design criteria, valid change control, audit ability, and proof of performance. Emphasis is placed on indexing, i.e., determining the existence and location, storing, and retrieving records for future use.

A.3 Document Types

CM related document types usually found in a facility baseline are included in, but not limited to, the list below:

Design Documents. Design Documents are those design-related documents that define or otherwise control the final design, operation, or maintenance of a facility or program. Examples of design documents include drawings, as-builts, calculations, vendor manuals, equipment and document lists, studies, reports, and design and purchase specifications.

Facility Design Descriptions (FDDs). The FDD provides an authoritative reference document for facility performance requirements and as-is condition. FDDs provide a means to capture and control vital facility and system requirements, as-built configuration, and related design requirements and associated criteria. The technical content of each FDD is graded based on the hazards, complexity, and regulatory requirements associated with each facility and associated system(s).

Facility Operating Procedures: Operating procedures provide instructions enabling proper operation of important facility SSCs. Operating procedures also include operator aids such as placards.

Facility Safety Plan. A document defining the facility safety envelope and the facility's processes to ensure safe facility operations. Facility Safety Plans are developed in accordance with LPR 240-01-00, Facility and Operating Limits and Configuration with guidance found in LIG 240-01-10, Facility Safety Plan.

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Facility Surveillance Procedures: Surveillance procedures provide instructions for in-situ testing of important facility SSCs to verify that they are capable of performing their design function upon demand (as defined by the facility safety envelope and design and configuration documents).

Master Document List. The Master Document List is a controlled electronic database (or hardcopy) that contains a searchable index of all documentation and records within the scope of the CM program.

Master Equipment List (MEL). The MEL is a controlled hardcopy or electronic database of facility, LSG and applicable programmatic SSCs. The MEL captures and controls equipment information such as identification number, name, function, location, vendor data, design information, management level, and reference documentation.

Priority Drawings. Priority Drawings include the small set of “upper-tier” design drawings that are necessary to support the safe performance of facility operations, maintenance, and design activities within the facility’s approved safety envelope. These drawings typically include piping & instrumentation diagrams, emergency evacuation maps (e.g., floor plans), logic drawings, and electrical one-lines.

Procedure. An approved and controlled document defining steps or actions to accomplish a task. In context of this LIR, procedures include (but are not limited to) formal surveillance procedures, safe operating procedures, administrative procedures, and facility operating procedures. Procedures may also include operator aids (e.g., placards, operations notes, or postings).

System Design Description (SDD). A document defining a facility safety or mission-important system. The SDD consolidates existing system designs and presents design basis requirements imposed on the system by governing criteria and analyses that dictate system design features and configurations.

Guidance

Appendix B

Recommended Major Implementation Criteria for Self-Assessment (Non-Mandatory)

LIR Title	LIR Number
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The major implementation criteria listed below are provided to assist Laboratory organizations to assess their implementation of this LIR. These criteria provide an objective basis for self-assessing implementation of the major requirements contained in the LIR. The LIR also states requirements in other areas, such as, scope, responsibilities, and documentation that, when applied, complement the successful implementation of these major requirements.

- 1. The most important criterion for assessing the implementation status of this LIR should be, if applicable: Have the requirements contained in the LIR been communicated to the individual(s) responsible for performing the work?**
 - 2. In addition, the recommended major implementation criteria for self-assessment of the implementation status of this LIR are the following (bullet each criterion):**
 - Configuration management responsibilities are identified, well delineated and properly staffed.
 - Baselines are established at a level commensurate with the hazard category of the facility and the management level(s) of supporting structures, systems or components (SSC). Baselines are defined by the minimum set of documentation required to enable facility and programmatic activities to be conducted within the hazards and safety envelope defined in the Facility Safety Plan. The minimum baseline requirements for nuclear and non-nuclear facilities that apply are identified in Tables 1 and 2.
 - Formal graded processes for controlling changes are established. These formal processes apply to changes to the approved baseline, i.e., the Facility Safety Plan and supporting documentation and to facility design documentation, hardware, software, and procedures.
 - Information within the scope of the CM program is controlled to enable retrieval of information that affects the hazards and safety envelope defined in the Facility Safety Plan. Information management systems shall include:
 - Document Control and Records Management (see Tables 1 and 2 for the types of CM documents and records) and
 - Equipment Data (an equipment data management system, e.g., Master Equipment List, shall be established to identify and control equipment information).
 - Periodic CM assessments are performed to ensure conformance to the requirements delineated in this LIR. The assessment period shall be determined by the Facility Manager.
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